5) 長沢純夫・中山 勇 1965 あいさつ **13**：8–13.
6) 長沢純夫・中山 勇 1967 関西病害虫研究会報 **9**：1–5.

SUMMARY

Under laboratory condition, the larvae of the Soshigaya and Nakaizu races of the Gypsy moth, *Lymantria dispar* L., were reared separately on leaves of rose and persimon. Females of the Soshigaya race moulted six or five times in their larval stage and males moulted five times. Females of the Nakaizu race moulted six or five times and males moulted five or four times. The relations of log-width of exuviae of head capsule to instar number were found to be presented by the curvilinear equations shown in Table 2. As shown in Fig. 1, the width of head capsule of the Soshigaya race is larger than that of the Nakaizu race, and that of females is larger than that of males, and also that of individuals moulted six times is larger than that of individuals moulted five times. As shown in Table 3, the similar relations were found in the duration of larval stage, but on the contrary the pupal period of female is shorter than that of male in both Soshigaya and Nakaizu races. As is seen in Fig. 2, we shall be able to determine the instar in which a larva belongs by measuring of width of exuviae of head capsule in the larvae ranging from the 1st to 3rd instars but we shall fail to tell the instar number by this method in the larvae ranging from the 4th to the last instars. The width of the head capsule, however, will fulfil the purpose of the rough presumption of instar to which a larva belongs.

浜松市で採集されたツマグロキチョウの異常型

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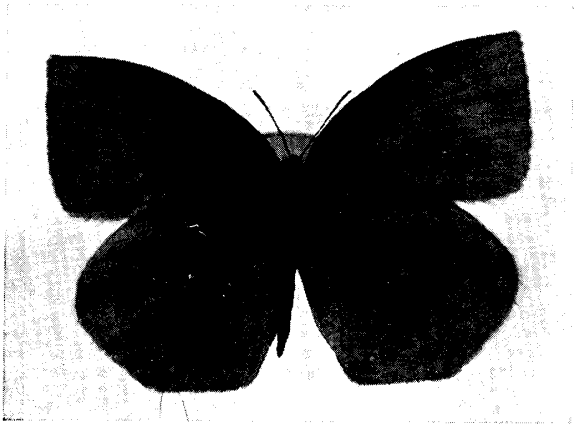
ここに報告する異常型は古く内藤詮太郎氏によって *Eurema laeta* ab. *eluta* NAITO (Zephyrus, 2(3)：151,1930) と名付けられたものと全く同じで，正常型に見られる前後翅表面の黒色部がわずかな黒色鱗粉を残してほとんど完全に消失したものである．内藤氏のものは“東京市外高井戸町字上高井戸の或る雑木林中”で1928年9月28日に採集された秋型の♀，ここに記録するのも同じ秋型の♀で，1964年10月5日に静岡県浜松市で新村勝美氏によって採集されたもので，前翅長21 mm，体長15 mm．

夏型についても同様な異常型が発見されており，これは ab. *kuronashii* HIRAYAMA (平山修次郎，虫の世界，3：12，1933) と名付けられている．したがってここに記録したものはツマグロキチョウのこの型の異常型としては第3頭目のものであると思う．

ツマグロキチョウは浜松地方でもその分布は局地的であるが，三方原台地には多い．今まで多数の標本を見ているが異常型が発見されたのははじめてのことである．

本異常型の採集例その他についてご教示を頂いた九州大学の白水隆教授，標本を恵与された採集者の新村勝美氏に感謝の意を表する．



浜松市で採集されたツマグロキチョウの異常型

Table 1. Log-width (y=log. mm+1.0000) of the head capsule in successive instars of individual larva of the Soshigaya race of the male Gypsy moth, *Lymantria dispar* L., moulted five times

Larva No.	Log-width for instar						T_g	$\Sigma(x_1y)$	$\Sigma(x_2y)$	$\Sigma(x_3y)$	$\Sigma(x_4y)$
	I	II	III	IV	V	VI					
1	0.7782	1.0212	1.2430	1.4232	1.5623	1.7243	7.7522	6.5340	−0.7358	0.2220	0.0844
2	0.7782	1.0212	1.2175	1.3892	1.5563	1.7482	7.7106	6.6270	−0.3723	0.4175	0.0073
3	0.7782	1.0414	1.2430	1.4232	1.5740	1.7404	7.8002	6.5890	−0.6872	0.3620	0.0048
4	0.7782	1.0414	1.2430	1.4393	1.6021	1.7404	7.8444	6.6894	−0.7797	0.1009	−0.0473
5	0.7782	1.0414	1.2304	1.4314	1.5911	1.7482	7.8207	6.7001	−0.6477	0.1981	−0.0475
6	0.7782	1.0414	1.2304	1.4232	1.5911	1.7559	7.8202	6.7304	−0.5764	0.2694	−0.0562
7	0.7782	1.0212	1.1903	1.3979	1.5682	1.7482	7.7040	6.6986	−0.3102	0.1906	−0.0654
8	0.8129	1.0414	1.2304	1.4065	1.5502	1.7243	7.7657	6.2595	−0.4532	0.2910	0.0362
9	0.7782	1.0607	1.2553	1.4548	1.6021	1.7597	7.9108	6.7312	−0.8137	0.3197	−0.0303
10	0.7782	1.0414	1.2304	1.4314	1.5798	1.7559	7.8171	6.7047	−0.5979	0.3157	−0.0059
11	0.7782	1.0414	1.2788	1.4472	1.5855	1.7324	7.8635	6.5717	−0.9779	0.2887	0.0819
12	0.7782	1.0414	1.2430	1.4393	1.6021	1.7559	7.8599	6.7669	−0.7022	0.1784	−0.0318
13	0.7782	1.0414	1.2304	1.4150	1.5740	1.7202	7.7592	6.4924	−0.7050	0.2434	−0.0570
14	0.7782	1.0000	1.2175	1.4150	1.5682	1.7243	7.7032	6.6326	−0.5857	−0.0369	0.0629
15	0.7404	1.0000	1.2175	1.4230	1.5798	1.7284	7.6891	6.8849	−0.7978	0.0594	0.0104
16	0.7782	1.0000	1.2430	1.4232	1.5623	1.7243	7.7310	6.5976	−0.7146	0.0736	0.1480
17	0.7782	1.0414	1.2672	1.4548	1.6075	1.7559	7.9050	6.7744	−0.8664	0.1754	0.0314
18	0.7782	1.0000	1.2175	1.3979	1.5740	1.7364	7.7040	6.6934	−0.4626	0.0514	0.0234
19	0.7782	1.0414	1.2304	1.4314	1.5855	1.7634	7.8303	6.7593	−0.5661	0.3133	−0.0155
20	0.7782	1.0212	1.1903	1.3979	1.5682	1.7520	7.7078	6.7176	−0.2912	0.2096	−0.0616
21	0.7782	1.0212	1.2175	1.4150	1.5740	1.7597	7.7656	6.7634	−0.4357	0.2479	0.0173
22	0.7782	1.0000	1.2041	1.3802	1.5502	1.7324	7.6451	6.5977	−0.3344	0.2152	0.0286
23	0.7782	1.0212	1.2304	1.4150	1.5911	1.7482	7.7841	6.7443	−0.5619	0.1223	−0.0197
24	0.7782	1.0000	1.2175	1.4150	1.5740	1.7033	7.6880	6.5450	−0.6965	−0.1825	0.0245
25	0.7782	1.0000	1.2430	1.4150	1.5682	1.7324	7.7368	6.6476	−0.6472	0.1056	0.1220
26	0.7782	1.0414	1.2304	1.4150	1.5563	1.7482	7.7695	6.5793	−0.5473	0.5073	0.0241
27	0.7404	1.0414	1.2430	1.4393	1.6021	1.7443	7.8105	6.8979	−0.9492	0.3094	−0.0812
28	0.7782	1.0000	1.2304	1.4065	1.5563	1.7160	7.6874	6.5340	−0.6329	0.0905	0.0991
29	0.7404	1.0000	1.2041	1.3979	1.5798	1.7284	7.6506	6.8732	−0.6438	0.1062	−0.0666
30	0.7782	1.0414	1.2553	1.4472	1.6021	1.7520	7.8762	6.7430	−0.8025	0.1765	0.0047
31	0.7782	1.0212	1.2672	1.4472	1.6075	1.7597	7.8810	6.8464	−0.7968	0.0834	0.0806
32	0.8129	1.0414	1.2430	1.4150	1.5855	1.7284	7.8262	6.3818	−0.5524	0.0808	−0.0234
33	0.7782	1.0000	1.2672	1.4472	1.6021	1.7597	7.8544	6.8938	−0.7702	−0.0272	0.1604
34	0.7782	1.0212	1.2430	1.4393	1.5966	1.7482	7.8265	6.7725	−0.7150	0.0370	0.0376
35	0.7782	1.0212	1.2430	1.4314	1.5855	1.7364	7.7957	6.6723	−0.7313	0.0873	0.0433
36	0.7404	1.0414	1.2553	1.4314	1.5911	1.7634	7.8230	6.9402	−0.8603	0.5627	−0.0203
37	0.7782	1.0212	1.2175	1.3802	1.5441	1.7284	7.6606	6.4824	−0.4231	0.4399	0.0061
38	0.7782	1.0000	1.1903	1.3979	1.5740	1.7324	7.6728	6.7006	−0.3738	−0.0774	−0.0350
39	0.7782	1.0414	1.2430	1.4150	1.5378	1.7160	7.7314	6.3502	−0.7402	0.5262	0.0726
40	0.7782	1.0000	1.2304	1.4314	1.6075	1.7745	7.8220	7.0050	−0.4912	−0.0750	0.0538
41	0.7782	1.0212	1.2430	1.4314	1.5855	1.7284	7.7877	6.6323	−0.7713	0.0473	0.0353
42	0.7782	1.0212	1.2304	1.4065	1.5502	1.7202	7.7067	6.4731	−0.6270	0.3026	0.0580
43	0.7404	1.0414	1.2304	1.4314	1.5682	1.7118	7.7236	6.6384	−0.9958	0.3654	−0.0530
44	0.7782	1.0212	1.2175	1.3979	1.5740	1.7284	7.7172	6.5898	−0.5238	0.1598	−0.0482
T_t	34.1212	45.0815	54.2462	62.5141	69.4480	76.5395	341.9505	293.4589	−28.2672	8.4544	0.5928
x_1	−5	−3	−1	+1	+3	+5					
x_2	+5	−1	−4	−4	−1	+5					
x_3	−5	+7	+4	−4	−7	+5					
x_4	+1	−3	+2	+2	−3	+1					
$\bar{y}_t$	0.7755	1.0246	1.2329	1.4208	1.5784	1.7395					
Y	0.7757	1.0231	1.2358	1.4179	1.5799	1.7392					

B_1= 0.09528
B_2=−0.00765
B_3= 0.00107
B_4= 0.00048

Table 2. Analysis of variance of the larvae measurements

Row	Term	Males moulted 5 times-Soshigaya			
		DF	*SS*	*MS*×10⁶	*F*
1	Between larva totals	43	0.036855	857.1	7.26**
2	Regression, B_c^2	1	27.960431	27960431.0	
2′	Regression, Q_c^2	1	0.216189	216189.0	1830.56
2″	Regression, C_c^2	1	0.009025	9015.0	76.42**
3	Scatter	2	0.001246	623.0	5.28**
4	Larva×*B*	43	0.014830	344.9	2.92**
4′	Larva×*Q*	43	0.015976	371.5	3.15**
4″	Larva×*C*	43	0.006560	152.6	1.51*
5	Larva scatter	86	0.008669	100.8	
6	Total	263	28.269781		
7	Correction	1	442.917214		
8	Pooled error	129	0.015229	118.1	

Row	Females moulted 5 times-Soshigaya				Females moulted 6 times-Soshigaya			
	DF	*SS*	*MS*×10⁶	*F*	*DF*	*SS*	*MS*×10⁶	*F*
1	23	0.019983	868.8	4.45**	29	0.033373	1150.8	8.80**
2	1	16.807261	16807261.0		1	25.909500	25909500.0	
2′	1	0.079497	79497.0	406.84	1	0.296704	296704.0	2270.11
2″	1	0.005521	5521.0	28.25**	1	0.009913	9913.0	75.85
3	2	0.001116	558.0	2.86	3	0.004755	1585.0	12.13**
4	23	0.011540	501.7	2.57**	29	0.005169	178.2	1.36
4′	23	0.006129	266.5	1.36	29	0.007353	253.6	1.94**
4″	23	0.004914	213.7	1.15	29	0.005615	193.6	1.76
5	46	0.008566	186.2		87	0.009548	109.7	
6	143	16.944527			209	26.281930		
7	1	249.750349			1	391.034318		
8	69	0.013480	195.4		116	0.015163	130.7	

Row	Males moulted 4 times-Nakaizu				Males moulted 5 times-Nakaizu			
	DF	*SS*	*MS*×10⁶	*F*	*DF*	*SS*	*MS*×10⁶	*F*
1	2	0.005854	2927.0	11.07*	27	0.059115	2189.4	10.7**
2	1	1.420536	1420536.0		1	16.172772	16172772.0	
2′	1	0.000320	320.0	1.21	1	0.048820	48820.0	224.56
2″					1	0.011432	11432.0	52.59**
3	2	0.001203	601.5	2.28	2	0.004124	2062.0	9.48**
4	2	0.001114	557.0	2.11	27	0.017935	664.3	3.06**
4′	2	0.000850	425.0	2.31	27	0.011504	426.1	1.96*
4″					27	0.005623	208.3	0.94
5	4	0.000736	184.0		54	0.011990	222.0	
6	14	1.430613			167	16.343315		
7	1	22.347233			1	268.259500		
8	6	0.001586	264.3		81	0.017613	217.4	

Row	Females moulted 5 times-Nakaizu				Females moulted 6 times-Nakaizu			
	DF	*SS*	*MS*×10⁶	*F*	*DF*	*SS*	*MS*×10⁶	*F*
1	8	0.010565	1320.6	8.55**	1	0.002450	2450.0	18.23**
2	1	5.956786	5956786.0		1	1.653644	1653644.0	
2′	1	0.003576	3576.0	23.15**	1	0.008630	8630.0	64.21**
2″	1	0.002150	2150.0	13.92**				
3	2	0.003531	1765.5	11.43**	4	0.002339	584.8	4.35
4	8	0.002425	303.1	1.96	1	0.001031	1031.0	7.67*
4′	8	0.000799	99.9	0.65	1	0.000005	5.0	0.03
4″	8	0.001300	162.5	1.08				
5	16	0.002408	150.5		4	0.000667	166.8	
6	53	5.983540			13	1.668766		
7	1	89.610541			1	24.992819		
8	24	0.003708	154.5		5	0.000672	134.4	

Table 3. Equations for the growth of log-width of exuviae of head capsules, y=log. mm+1.0000, in the successive instars, X, of larvae of the Soshigaya and the Nakaizu races of the Gypsy moth, *Lymantria dispar* L.

Race	Sex	Number of moults	Number of larvae	Equation
Soshigaya	Female	5	24	$Y=1.34444+0.19055(x-3.5)-0.00942(x-3.5)^2+0.00188(x-3.5)^3$
		6	30	$Y=1.42712+0.16695(x-4)-0.02866(x-4)^2+0.00124(x-4)^3+0.00186(x-4)^4$
	Male	5	44	$Y=1.33017+0.18157(x-3.5)-0.01338(x-3.5)^2+0.00178(x-3.5)^3+0.00028(x-3.5)^4$
Nakaizu	Female	5	9	$Y=1.29077+0.18478(x-3\cdot5)+0.00604(x-3.5)^2+0.00192(x-3.5)^3-0.00137(x-3.5)^4$
		6	2	$Y=1.36479+0.17184(x-4)-0.00717(x-4)^2$
	Male	4	3	$Y=1.22058+0.21760(x-3)$
		5	28	$Y=1.28273+0.16895(x-3.5)-0.00569(x-3.5)^2+0.00252(x-3.5)^3-0.00017(x-3.5)^4$

Table 4. Duration of larval and pupal stages of the Soshigaya and Nakaizu races of the Gypsy moth, *Lymantria dispar* L.

Race		Soshigaya			Nakaizu			
Sex		Male	Female		Male		Female	
No. of moults		5	5	6	4	5	5	6
Larval period in days	51				1	3		
	52					1		
	53					2		
	54					1		
	55					6		
	56					2	1	
	57					5		
	58				1	5	3	
	59				1	1	2	
	60	2					2	
	61	1				2		1
	62	5						
	63	8						
	64	7	1				1	1
	65	13		1				
	66	4	3					
	67	1	3					
	68	3	2					
	69		4					
	70		4					
	71		3	3				
	72		1	3				
	73		3	6				
	74			4				
	75			7				
	76			3				
	77			3				
	Mean	64.16	69.13	73.73	56.00	55.82	59.11	62.50
Pupal period in days	13						2	
	14			4			5	
	15		16	21			2	2
	16		6	4		3		
	17	1	2	1	2	17		
	18	4				4		
	19	24			1	2		
	20	14				1		
	21	1						
	22					1		
	Mean	19.23	15.42	15.07	17.67	17.46	14.00	15.00